



High School Science Virtual Learning

Environmental Science

Greenhouse Gases

April 23, 2020



High School Environmental Science

Lesson: April 23, 2020

Objective/Learning Target:

Students will be able to identify different Greenhouse Gases and their effects.



1. What is global warming?
2. How is global warming different from climate change?

1. Global warming is the increased rate of natural temperature fluctuations due to human interference.
2. Climate change is a naturally occurring process where global temperatures fluctuate over a course over several thousand years. Global warming is the human impact on this causing the rate to increase over a couple hundred years.



Lesson Activity:

Directions:

1. Watch the video and read the two articles that are linked below over greenhouse gases.
2. Take careful notes over what greenhouse gases are, what the different types are, and where they come from as you do so.
3. Create a memo that can be sent out to your friends and family about what greenhouse gases are. This should be no more than 5 paragraphs long and be as informative as possible.

Link(s):

[Video](#)

[Article 1](#)

[Article 2](#)



Practice

You will use the information from the activity on slide 5 to answer the following questions.



Practice Questions

1. Why do some gases absorb infrared radiation?
2. What are 2 examples of gases that absorb infrared radiation?
3. Why do methane and carbon dioxide appear nonpolar, but absorb infrared radiation?
4. Why does a mass majority of our atmosphere not absorb infrared radiation?
5. Why do such small changes in gases contribute to such large changes in temperature?

Answer Key

Once you have completed the practice questions check with the work.

1. The polarity of the molecules allow the more negatively charged side to absorb some of the infrared radiation.
2. Answers will vary, but could consist of H_2O O_3 N_2O
3. The movement of the gases cause the molecules configuration to change enough to move the charge. This allows parts to absorb that infrared radiation.
4. Our atmosphere is comprised mostly of nitrogen and oxygen which are to symmetric to become polar in movement.
5. The polar gases absorb roughly 90% of the infrared radiation leaving the Earth which allows for small changes in the gases to equal large changes in the temperature



More Practice

You will use the information from the activity on slide 5 to answer the following questions.

More Practice Questions

1. What impact have humans had on the amount of CO_2 in the atmosphere?
2. What three gases are the primary concern as they are so closely associated with human activities?
3. What is the main contributor of CO_2 or carbon dioxide?
4. What is the main contributor of methane?
5. What is the main contributor of nitrous oxide?

Answer Key

Once you have completed the practice questions check with the work.

1. Humans have increased the atmospheric CO₂ by 42% since the industrial era. Levels of CO₂ are believed to be higher than they have been in nearly half a million years.
2. Carbon dioxide (CO₂), Methane, Nitrous oxide
3. The main contributor of CO₂ is the burning of fossil fuels.
4. The main contributor of methane is cattle farming, waste dumps, rice farming and the production of oil and gas.
5. The main contributor of nitrous oxide is the use of chemical fertilizers in farming and the burning of fossil fuels.



Extra Resources

Here is more information on greenhouse gases: [Greenhouse Gases Introduction](#)

Here is more information about the different types of greenhouse gasses: [Specific Types of Greenhouse Gases](#)

Still want more information? Here is another excellent resource: [Greenhouse Gases 2.0](#)